

CALIFORNIA DIVISION OF MINES AND GEOLOGY

<sup>11/0.1</sup>  
SUPPLEMENT TO FER-161

Northern Segment of the White Mountains Fault Zone

by

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Subsequent to the preparation of FER-161 by T.C. Smith, it was determined that an active strand of the White Mountain fault could be traced about 1.5 miles (2.5 km) south of the Montgomery Peak SW quadrangle into the White Mtn NW quadrangle.

The main evidence for extending the recently active fault southward is the extremely steep, linear, mountain front and the existence of ephemeral geomorphic features, which suggest significant, recent down-to-the-west, normal faulting. An apparent scarp in a truncated fan in Falls Canyon, along with other nearby features to the north and south, indicate the specific location and recency (Holocene?) of this fault. The southern extension of the fault is based on the interpretation of aerial photographs (USBLM, 1977, photos CAO 1-77, Nos. 1-31-25 to 1-31-28) and which is summarized in Figure 5. Field checking has not been done, due to the lack time.

Crowder and Sheridan (1972) did not map this active trace, but they show the area where tectonic geomorphic features are noted to be underlain by Holocene alluvial fan and talus deposits. However, they do map a major zone of west-dipping normal faults in Paleozoic and Mesozoic bedrock immediately to the east. A similar relationship exists to the north between the active frontal fault mapped by Smith (this FER) and the White Mountains fault zone of Crowder and others (1972).

The young fault trace identified in Figure 1 becomes increasingly difficult to identify to the south, although its position can be inferred locally as far south as the mouth of Pellisier Creek canyon, about 2 km (1.4 miles) to the south-southeast of Falls Canyon. The location of recently active faults cannot be observed or inferred to the south of there, where the White Mts range front loses its linearity, even though this is the highest part of the range (14,246 feet) and presumably has undergone considerable Quaternary uplift. Farther to the south in the White Mtn ~~Peak~~ 15-minute quadrangle, south of Milner Creek, a youthful zone of range-front faults again can be identified (Bryant, 1984; Crowder and Sheridan, 1972). However, most of these faults dips to the east with normal displacement.

Based on this writer's preliminary work, a segment of the White Mountains fault appears to be Holocene-active and reasonably well-defined as far south as Falls Canyon. South of there, the active trace is increasingly difficult to follow and cannot be mapped at all south of Pellisier Creek.

If this area were under the threat of development, the segment of the White Mountains fault shown in Figure 5 clearly would be recommended for zoning. However, the lack of time prevents the evaluation of other faults which have been mapped as Holocene-active within the White Mtn. NW quadrangle by Crowder and Sheridan. A brief examination of aerial photos suggest that some of these other faults may not be active. Also, some of the faults appear to be somewhat mislocated and other recently active faults may not have been mapped. None of these other faults appear to be major.

Therefore, it is recommend that none of the faults in the White Mtn. NW quadrangle be zoned until further evaluations can be undertaken. The area of the White Mountains fault does not appear to be developable due to the steepness of the terrain and the apparent threat of large debris flows which periodically emanate from the canyons and catastrophically flood portions of the alluvial fans.

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REFERENCES TO FER-161 SUPPLEMENT (see FER 161 for other references)

- Bryant, W.A., 1984, Northern Owens Valley, Fish Slough, and White Mountains frontal faults, Inyo and Mono Counties: California Division of Mines and Geology Fault Evaluation Report FER-153 (unpublished).
- Crowder, D.F., and Sheridan, M.F., 1972, Geologic map of the White Mountain Peak quadrangle, Mono County, California: U.S. Geological Survey Geologic Quadrangle Map GQ-1012.
- Crowder, D.F., and Robinson, P.T., and Harris, D.L., 1972, Geologic map of the Benton quadrangle, Mono County, California, and Esmeralda and Mineral Counties, Nevada: U.S. Geological Survey Geologic Quadrangle Map GQ-1013, 1 sheet.
- Smith, T.C., 1984, Northern segment of the White Mountains fault zone and the Benton Valley and Black Mountain faults, Mono County, California: California Division of Mines and Geology Fault Evaluation Report FER-161 (unpublished).

Figure 5 (Supplement to FEA-161). Recently active trace of White Mountains fault zone, White Mtn. NW 7.5' quadrangle

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